

AMENDMENTS TO THE CLAIMS

This listing of the claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1 – 7. (Canceled)

8. (Original) An injector head provided therein with a syringe filled with a contrast medium, comprising:

a plunger capable of reciprocating in a direction of movement of a piston in said syringe;

plunger drive means for converting rotary motion of a motor to linear motion in order to supply reciprocation to said plunger; and

safety means for restraining rotation of a rotary shaft of said motor by a mechanical operation when said plunger moves beyond a predetermined position.

9. (Original) The injector head according to claim 8, wherein

said safety means includes:

locking means provided in the vicinity of said rotary shaft to be capable of restraining rotation of the rotary shaft of said motor, and

trigger means mechanically operating said locking means so that said locking means restrains said rotary shaft when said plunger moves beyond the predetermined position.

10. (Original) The injector head according to claim 9, wherein
said locking means is
provided to be capable of selecting a first position fixing rotation of said rotary shaft and
a second position liberating rotation of said rotary shaft, and
said trigger means includes:
a detection mechanism for mechanically detecting a moving end of said plunger, and
a link mechanism setting said locking means on the first position by said detection
mechanism when said plunger moves beyond the predetermined position.

11. (Original) The injector head according to claim 10, wherein
said locking means includes :
a fixed lock ring provided around said rotary shaft and including a groove portion having
such a sliding surface that the distance between said sliding surface and the center of said rotary
shaft gradually shortens along a prescribed rotational direction of said rotary shaft on a side
facing said rotary shaft,
a lock pin arranged in said groove portion , and
a movable lock ring holding said lock pin to be movable between a first position locating
said lock pin between a surface of said sliding surface most shortening the distance between said
sliding surface and said rotary shaft and said rotary shaft and restraining rotation of said rotary
shaft by a wedge effect and a second position liberating rotation of said rotary shaft in said
groove portion.

12. (Original) The injector head according to claim 10, wherein
said detection mechanism includes:
a follower rotary shaft rotating following rotation of said drive,
a body plate having the same rotation center as the rotation center of said follower rotary
shaft,
a first gear, having the same rotation center as the rotation center of said follower rotary
shaft, to which rotation of said follower rotary shaft is transmitted through a first gear
mechanism supported on the peripheral portion of said body plate, and
a second gear having the same rotation center as the rotation center of said follower
rotary shaft, having a specific rotation control mechanism and arranged to be opposite to said
first gear,
a surface of either one of said first gear and said second gear opposed to the other gear is
provided with a pin projecting toward the other gear and a surface of the other gear opposed to
one of the gears is provided with a ring-shaped guide slit having both end portions extending
along the rotation locus of the pin to be capable of receiving said pin, and
said link mechanism has:
an engaging pin provided on said movable lock ring,
an operating mechanism provided to be rotatable about a prescribed axis for rotating said
movable lock ring so that said lock pin is on the first position with an end engaging with said
engaging pin, and
a link bar having an end coupled to the peripheral portion of said body plate by a
universal joint and another end coupled to the other end of said operating mechanism by a
universal joint.

13. (Original) The injector head according to claim 12, wherein
said operating mechanism has electric signal generation means converting movement of
said operating mechanism to an electric signal.

14. (Original) The injector head according to claim 10, wherein
said detection means has means limiting the stroke of said plunger.